EXPANDABLE OPTICAL ARRAY

ABSTRACT OF THE INVENTION

An optical component array allowing expansion of the occupied bandwidth on an existing optical transmission network without disrupting signal traffic. Wavelength selective filters **(16, 30; 20, 34)** and optical components, such as amplifiers **(18, 32)** are arrayed for use with a wavelength division multiplexed optical transmission system to transmit a selected portion of a transmission spectrum to an amplifier path and reflect the remainder of the spectrum. Wavelength selective filters and associated amplifiers are arranged in a cascade configuration with a bypass path **(35, 37)**. Additional wavelength selective filters and amplifiers can be added in the bypass path without disrupting existing signal traffic, and such additions can provide for a remaining bypass path, thus allowing further expansion. This configuration provides an expandable amplifier array with a low initial cost. In a further embodiment, a center segment of the input transmission spectrum is passed through an amplifier path **(60)** and a red/blue splitter **(62)** having a transition region within the band of the center segment further splits the input spectrum into two expandable amplifier arrays paths. The two arrays allow reduced insertion loss and optimization of amplifier characteristics for multi-channel systems.